Galileo Resources PLC - GLR

Star Zinc Issues JORC 2012 Technical Report

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Galileo Resources Plc
("Galileo" or "the Company")

Star Zinc Issues JORC 2012 Technical Report and Inferred Resource Estimate

Further to Galileo's previous announcement 26 June 2019 on its completion of an initial inferred resource estimate for the Star Zinc Project (the "SZ Project") located near Lusaka, Zambia, it is pleased to announce the issue of the final Technical Report and Inferred Mineral Resource Estimation ("MRE ") prepared by Addison Mining Services ("AMS") in accordance with JORC 2012. This MRE report supports the previously reported initial findings of approximately **500,000 tonnes at 16% Zinc for 77,000 tonnes of contained metal above a cut-off grade of 2% Zinc**. **This includes approximately 340,000 tonnes at 21% Zinc for 72,000 tonnes of metal above a cut-off grade of 8%**. The Company has a 95% beneficial interest in the Project and the Zambian government a 5% interest.

To view the MRE report with the illustrative diagrams and JORC code 2012 Table 1 please use the following link: https://www.galileoresources.com/

Highlights

· Galileo completes the MRE in accordance with JORC 2012 for its Star Zinc project (Licence tenure 19653-HQ-LEL).

· The MRE, using a preliminary open-pit optimisation method confirms a high grade hypogene Inferred zinc (Zn) resource with reasonable prospects of economic extraction of approximately **500,000 (net attributable 475,000) tonnes at 16% Zn for 77,000 (net attributable 73,150) tonnes of contained metal above a cut-off grade of 2% Zn**. **This includes approximately 340,000 tonnes at 21% Zn for 72,000 tonnes of metal above a cut-off grade of 8% Zn. (**

· The MRE containing a gross estimate of **77,000** tonnes of zinc metal, is suitable for potential direct shipping material for ROM to the zinc process/refinery (Sable) facility at Kabwe, located approximately 120km north of the Project.

· The MRE model defines a clear boundary between a high-grade (>8% Zn) domain and a low-grade (<8% Zn) zone.

· All of the high-grade resource, +8% Zn blocks, fall within the preliminary pit shell generated for the purpose of outlining resources with reasonable prospects of economic extraction.

· Mineralised hypogene material outside of the preliminary pit shell remains an Exploration Target[(a)] estimated as being **between approximately 85,000 and 180,000 tonnes with an estimated average grade of 3 to 5 % Zn**.

· Similarly, a portion of the mineralised near surface secondary supergene material remains an Exploration Target[(a)] estimated as being **between approximately 13,000 and 77,000 tonnes with an estimated average grade of 3 to 5 % Zn.**

· The MRE will enable the Company to apply for a mining permit, and among other things undertake related economic and engineering studies for a shallow open-pit mining operation as a prerequisite to the application , finalise an off-take agreement for direct shipping ore and transfer the SZ licence to its subsidiary Enviro Processing Zambia Ltd from BMR Group plc's Zambian subsidiary Enviro Processing Ltd..

Colin Bird, Chief Executive Officer, said: "This Technical Report and JORC-compliant resource estimate confirms the company's publicly announced* presence of a high grade zinc component in the deposit suitable for direct shipping to Jubilee Metal Group plc's zinc process/ Sable refinery plant at Kabwe . The MRE clearly identifies an easy access near-surface mineable zone with a low stripping ratio of one to one. There will be no requirement for processing equipment other than possibly a mobile primary crusher. A low grade portion of the mineralised material remains an exploration target and may be amenable to preconcentrate/upgrade to about 10% Zn either as DSO or blending, pending further test work and method development.

The MRE will allow for a 6-year life-of-mine small scale operation to produce rock mass of only 5,500t/month containing 12,000 t zinc metal per year to Kabwe. While in-house attributable revenues are projected at about USD15 million annually at current price, the annual all in cost is projected not to exceed to USD2 million.

We intend to apply for a mining permit and to target mining to start as near as coincident with the start up of the Kabwe tailings project."

*Galileo RNS 14 November 2018

This announcement contains inside information for the purposes of Article 7 of Regulation 596/2014.

JORC (2012) Inferred Mineral Resource Estimate

Independent consulting group Addison Mining Services Ltd ("AMS) completed the mineral resource estimate. The Inferred estimate utilized data for all drill holes completed by Galileo with the final drillhole being completed on the 9th of December 2018. The final drillhole database used for estimation included 52 drill holes for 2220 m of drilling of which 1412 m were assayed over 1433 samples. All drill core was logged for geology, core recovery and rock quality designation.

The Company commissioned AMS to undertake the mineral resource estimate in May 2019.

Block Model

AMS has estimated an **Inferred Resource** of approximately **500,000 tonnes at 16% Zinc for 77,000 tonnes of contained metal above a cut-off grade of 2% Zinc**. **This includes approximately 340,000 tonnes at 21% Zinc for 72,000 tonnes of metal above a cut-off grade of 8%.**
The estimated grade tonnage curves and tabulations for the in-pit material are shown in Table 1 and Figure 1 and Table 2 below. Material below a 2% Zn cut-off grade is not considered to have a reasonable prospect of economic extraction and is not considered part of the Resource.
The Inferred Resource block model ranges from surface to approximately 40 m below surface over a length of approximately 300 m from east to west and 20 to 100 m from north to south. Thickness is typically between 5 and 25 m.

Table 1: Summary of Resources by Status

Category	Gross			Net Attributable			Operator
	Tonnes (millions)	Grade (g/t)	Contained Metal	Tonnes (millions)	Grade (g/t)	Contained Metal	
Mineral resources per asset							
Measured							
Indicated							
Inferred	500,000	16	77,000	475,000	16	73,150	Galileo
Sub-total							
Total	500,000	16	77,000	475,000	16	73,150	

1. Mineral resources are reported using a 2% Zn cut-off. Figures may not sum due to rounding. The contained metal is determined by the estimated tonnage and grade.
2. Source: Mr J.N. Hogg, MSc. MAIG Principal Geologist for AMS, an independent Competent Person within the meaning of the JORC (2012) code and qualified person under the AIM guidance note for mining and oil & gas companies.

Figure 1: Star Zinc, estimated grade tonnage curves for material inside conceptual pit shell.
Table 2: Gross grade tonnage tables for material inside conceptual pit shell. Material below a cut-off grade of 2% is not considered to have a reasonable prospect of economic extraction and is not considered part of the Resource. See notes below for further explanation.
Star Zinc Gross Inferred Resource Grade Tonnage Table

Cut-off grade	VOLUME	TONNES	DENSITY	Av Zn Grade %	Contained Zn Metal
15	73,000	250,000	3.5	24	61,000
12	91,000	310,000	3.4	22	69,000
10	98,000	330,000	3.4	22	72,000
8	99,000	340,000	3.4	21	72,000
7	100,000	340,000	3.4	21	72,000
6	100,000	340,000	3.4	21	72,000
5	100,000	340,000	3.4	21	72,000
4	110,000	370,000	3.3	20	73,000
3	120,000	400,000	3.3	19	75,000
2	160,000	500,000	3.2	16	77,000
1	170,000	540,000	3.1	14	78,000

0	170,000	550,000	3.1	14	78,000

1. All material is classified as Inferred Category. Numbers are rounded to reflect that fact that an estimate has been made, and as such totals may vary.
2. Zn grades are in situ grades, no estimation of reserves have been made, resources which are not reserves do not have demonstrated economic viability.

Parts of the hypogene Zn mineralised block model currently outside the preliminary pit shell remain as an exploration target, with potential for conversion to a resource with the application of ore sorting and upgrade methods pending detailed test work and consideration of cost versus yield.
In addition, small quantities of supergene Zn mineralised pisolitic cover and karst cavity infill material remain as an exploration target, pending further investigation into suitable recovery methods.
These quantities of currently 'sub-economic' mineralisation offer potential for further development, and a small incremental addition to resources.
Silver credits for Star Zinc have not been estimated nor reported as part of this study. Potential exists to add Ag resources and potential Ag credits to the Star Zinc resource block model.

[a] Potential grade of the Exploration Target presented in Table 3 and Table 4. Error! Reference source not found. is conceptual in nature: there is insufficient processing and ore sorting data to report as a Mineral Resource at this time. It is uncertain if further technical studies and exploration will result in the estimation of a Mineral Resource.

Table 3: Summary of Hypogene Exploration Target estimated at above 2% Zn

CASE	VOLUME	TONNES	DENSITY	Zn%	Zn Metal Tonnes
Conservative	30,000	85,000	2.9	3 to 5	2,900 to 3,900
Pragmatic	63,000	180,000	2.9	3 to 5	6,100 to 8,300

Table 4: Summary of Secondary Supergene Exploration Target estimated at above 2% Zn

CASE	VOLUME	TONNES	DENSITY	Zn%	Zn Metal Tonnes
Conservative	4,600	13,000	2.9	3 to 5	400 to 600
Pragmatic	27,000	77,000	2.9	3 to 5	2,100 to 3,400

Summary of resource estimate and reporting criteria
In accordance AIM Guidance Note 16 and the JORC (2012) reporting guidelines, a summary of the material information used to estimate the Mineral Resource is set out below (for further detail please refer to the Appendix to this announcement).

Geology and geological interpretation
The Star Zinc deposit is hosted within metasedimentary rocks of the late Proterozoic Zambezi Supracrustal sequence (the Cheta and Lusaka Formations), consisting of upper greenschist facies limestones and dolostones marbles with quartz-muscovite schists and feldspathic quartzites. The succession in the Star Zinc pit consists of recrystallized limestone overlain by metamorphosed slatey limestone and then by coarse marbles overlain by hematite rich dolomite.

A broad dome is the main structural feature, with two main fracture trends present, one broadly N-S (typically dipping approximately 70° to the east) and one broadly E-W (typically dipping approximately 70° to the south), both irregularly mineralised.

Alteration and Mineralisation

Visual examination of carbonate host rocks in drill core suggests there is likely to have been a number of carbonate alteration events. However, hypogene zinc (with hematite and calcite) mineralisation appears to be linked with pervasive ferroan carbonate and dolomitic alteration events which largely overprint the carbonate country rocks. This generally becomes less intensive as the grade and thickness of the zinc mineralisation decreases. Argillites are also highly dolomitized in places. A late stage calcite flooding event observed as un-mineralised calcite veins and fractures (typically NW-SE trending with a 155° orientation, dipping 65° to the southwest) cross-cut all units.

Mineralisation at Star Zinc occurs in a variety of settings. A mineralized regolith (red soils, terra rossa) often overlies and forms infill on top of a highly irregular karstically weathered rock head morphology. The regolith is mainly comprised of a highly ferruginous pisolitic laterite soil which varies in depth from 0 to 12 m, with an average depth of approximately 5 m. Zinc values measured from soils in the vicinity of the pit can reach up to 1.56% Zn. The zinc mineralisation in this zone is predominantly comprised of hemimorphite, smithsonite and sauconite.

Erosion due to rain and ground water has also created fissures and underground cavities / voids at depth (usually in the top 20 m from surface). They range from 0.1 m to 5.0 m in drilled width and are often filled with clayey soil, lithic fragments, pisolitic laterite. The infill can often be highly mineralised with grades up to 45% Zn.

Hypogene willemite mineralisation is observed in many styles, broadly irregular, in parts tabular, including massive and semi-massive replacement zones, anastomosing, dilatational at the intersection of possible structures, in calcite-hematite-willemite veins and fractures and more brecciated zones.

Weathering

A regolith model was generated to separate supergene mineralisation types from hypogene mineralization. A base of weathering surface was also modelled, although no significant mineralization was intercepted in drilling within the weathered zone below the regolith.

Bulk density

Measurements were only completed on phase 1 diamond core which represents holes SZDD001 to SZDD026. Such measurements were carried out on 19 of the 26 holes spatially spread across the deposit, both to the west and east of the pit. Samples were collected for both mineralised and un-mineralised samples across a range of zinc grades determined by pXRF measurements and across all observed lithologies. A total of 261 samples were selected, typically ranging from 3 to 10 cm in length.

A strong positive correlation exists between bulk density and Zn laboratory assay grade. The linear regression line of Bulk Density vs Zn grade was used to calculate a bulk density value for each cell within the block model as follows:

- Estimated Bulk Density = 2.75 + 0.03xZn%

Drilling techniques and hole spacing

Galileo has completed two phases of orientated diamond drilling at the Star Zinc deposit. During the period between December 2017 to and March 2018, a total of 26 holes were completed for 1198.80 metres. A second phase of diamond drilling was completed from August to October 2018 in which a further 26 holes were completed for 1022 metres.

A total of 52 diamond drill holes totalling 2,220.80 metres were used as the input database for geological modelling and resource estimation.

Drill core diameter was PQ and HQ.

Non-vertical holes were orientated on HQ core only typically at end of each 3 metre run using a Reflect ACT II RD rapid decent core orientation tool.

Drill sample data spacing across the current resource area ranges from approximately 20-25m centres within the most densely tested area towards the west, stepping out to approximately 30m centres to the east.

The distribution of drillholes, supported by surface and underground mapping, is sufficient to establish the degree of geological and grade continuity appropriate for a JORC (2012) Inferred classification of resources.

Sampling and sub-sampling techniques

Sampling was typically completed on a 1 metre basis, though sampling widths did vary based on the above considerations from approximately 0.5 to 1.5 metres. Approximately 3 to 5 metres either side of the zone of interest were sampled and submitted for assay as well as internal waste up to lengths of 5 metres. Once the sampling intervals had been determined, the section of core was sawn yielding a quarter length piece of core for analytical purposes and the remaining three-quarter piece retained for reference purposes.

All core samples were submitted to Intertek Genalysis laboratories, with sample preparation based in Kitwe, Zambia and analysis in their laboratory in Maddington, Perth.

All samples are analysed for zinc, germanium, silver and vanadium. Zinc and germanium are determined by sodium peroxide fusion (zirconia crucibles) with ICP-OES/ICP-MS respectively. Silver and vanadium are determined via a four acid digest with ICP-MS.

Core Recoveries
For holes under the phase 1 programme (SZDD001 to SZDD026) the overall average recovery was 89%, whilst under the phase 2 programme (SZDD027 to SZDD052) the overall average recovery was 90%. Minimal core loss was exhibited, except generally within the top 20 metres of each hole, where average core recovery fell to 83%.

Reasonable Prospects for Economic Extraction and Cut-off grades
Galileo proposes to sell Run of Mine (ROM) material to the BRM PLC/Jubilee Metals Group Plc owned Sable zinc plant at the Kabwe Mine in Zambia. Kabwe is approximately 100 km to the North by the T2 paved road.
It is proposed by Galileo that Kabwe will pay a percentage rate of the market Zinc price per tonne of contained metal for material above a minimum 8% Zn. Although the minimum cut-off grade for a saleable product is 8% Zn, potential exists to blend mineralised material below this cut-off with higher grade material in order to maintain acceptable grades.
In order to identify material which has a reasonable prospect of economic extraction a preliminary pit optimisation to generate a basic ultimate pit shell was completed using the following key parameters;

- Zinc price - 2700 $/t (LME 3 year trailing average to April 2019)
- Minimum block grade to be considered - 8% Zn
- Ore/Waste mining cost - 6 $/t
- Rehabilitation - 1 $/t
- Transport - 11 $/t
- Mining Dilution - 5% (Waste/Ore)
- Mining Recovery - 95%
- Pit Slopes - 45°

The grade tonnage figures for all resource blocks within the resultant pit shell were then reported with mining dilution factors applied.
Mineralised blocks below the minimum 'Kabwe DSO' grade of 8% Zn which are mined to access optimised +8% Zn blocks being included as having potential value as blending material.
A minimum lower in pit cut-off grade of 2% Zn is identified as the threshold which maintains an average grade in excess of 15% Zn. It is anticipated that blending of material below 2% Zn has negligible impact on recoverable metal and would have a negative impact on potential revenue.

In order to establish the likely economic viability of the above mining approach AMS have estimated the profitability of the mining operation linked to a zinc leach-precipitation circuit. The report "Star Zinc Deposit - Conceptual Project Report", January 2015 by Scorpion Mineral Processing South Africa refers. The following key parameters are used:

- Milling - 11 $/t ore
- Leaching - 125 $/t ore
- Precipitation - 640 $/t zinc produced
- 4y cost price inflation from 2015 - 10 %
- Process recovery - 91 %
- Zn precipitate - 60%

The treatment of 15% Zn grade material is shown to be profitable at a $2,700/t zinc price and therefore AMS considers the +15% Zn resource using a 2% cut-off within the pit shell to have a reasonable prospect of being economic.

Estimation methodology
AMS verified primary analytical data via cross reference against original lab certificates and the re-input of all assays for the project for use in geological modelling and estimation. The database for use as input for mineral resource modelling and estimation has also been validated and verified by AMS and the Competent Person. Micromine 3D

geological modelling and estimation software was used for import, validation and QA/QC verification assessment, 3D solid modelling, geostatistics and block model grade interpolation estimation. Data checks include checks for overlapping and missing intervals, dh trace errors, missing survey data, lithology and collars.
All wireframe modelling was completed using implicit modelling. A surface wireframe of the base of the laterite and saprolite regolith horizon was generated and this model converted to a solid using the digital terrain model. Cavity areas were modelled as isolated volumes equal to the vertical thickness of the cavities with an approximate 5 m diameter. Two mineralized wireframes were generated to represent the low (>0.5% Zn) and high grade (>7% Zn) hypogene zinc domains.
Additional control strings and dynamic anisotropy were used to guide the shape and extents of the models and honour surface geological observations and legacy cross-sections.
Hypogene models were restricted to the Regolith and DTM and cavity areas removed. The high grade domain model was restricted so that it did not extend outside the low grade domain model.
Geological models were extrapolated up to ~50m in places between drillholes, the model is reasonably well constrained by drilling at periphery, the base of the model is well constrained by drilling.
All assay values were assigned to their corresponding mineral domain and composited to 2 m with a minimum accepted length of 1 m, residual lengths were added to the previous interval, length multiplied by density weighted average values were calculated for Zn grade.
Top cutting was not applied as no outlying high grade values were identified.
Directional variography was completed on the low and high grade domains using the composite data, the median indicator semi-variograms were found to produce the clearest structure and model semi-variograms fitted to these experimental models. The tertiary axis did not produce a clear experimental semi-variogram in both cases and was given a nominal range of 5m. The same axis orientations were used for both domains
A Block model with the cell size 10 m x 10 m x 4 m was generated over the deposit area, based on the approximate 30 m drill spacing and stratigraphic nature of mineralization. The mineral domain wireframes were written to the block model and sub blocking applied to preserve volumes, the block model was restricted to the DTM.
The block model was interpolated on a domain by domain basis using Ordinary Kriging. A variable search geometry was used to follow the dip of the deposit where it steepens near to the historic open pit, elsewhere the geometry of the axis used in variography were applied.

Additional Kriging Parameters are as follows.

- Interpolation was conducted at the parent block scale
- Discretization 5x5x2
- Negative weights were not set to zero
- Maximum of 2 composite points per drillhole
- Single sector search ellipsoid
- Search Radius 50 x 50 x 10 m for axis 1, 2 and 3 respectively.
- Maximum of 8 composite samples per search.

Following kriging the bulk density was estimated for each cell in the block model based on the estimated Zn grade and application of the linear regression formula described above. **Error! Reference source not found.**

Classification criteria
The Star Zinc deposit defined by drilling has been classified as an Inferred Mineral Resource in accordance with the JORC Code (2012) guidelines based on a combination of drill spacing, geological confidence, grade continuity, previous mining and the quality control standards achieved.

Mining and metallurgical methods and parameters
Based on the orientations, thickness and depths to which the ore body has been modelled, as well as the estimated grade, open pit mining is the intended mining methodology. Current anticipated processing route is the sale of ROM to the Sable Zinc Kabwe zinc plant.

Competent Person's statement

The Star Zinc resource estimate was prepared by Mr J.N. Hogg, MSc. MAIG Principal Geologist for AMS, an independent Competent Person within the meaning of the JORC (2012) code and qualified person under the AIM guidance note for mining and oil & gas companies. The resource estimate was aided by Mr R. J. Siddle, MSc, MAIG

Senior Resource Geologist for AMS, under the guidance of the competent person. Mr Hogg has reviewed and verified the technical information that forms the basis of, and has been used in the preparation of, the updated mineral resource estimate and this announcement, including all analytical data, diamond drill hole logs, QA/QC data, density measurements, and sampling, diamond drilling and analytical techniques. Mr Hogg consents to the inclusion in this announcement of the matters based on the information, in the form and context in which it appears. Mr Hogg has also reviewed and approved the technical information in his capacity as a qualified person under the AIM Rules for Companies.

Additionally, Mr Hogg confirms that the entity is not aware of any new information or data that materially affects the information contained within the Company's previous announcements referred to herein.

Forward looking statements

Certain statements in this announcement, are, or may be deemed to be, forward looking statements. Forward looking statements are identified by their use of terms and phrases such as ''believe'', ''could'', "should" ''envisage'', ''estimate'', ''intend'', ''may'', ''plan'', ''will'' or the negative of those, variations or comparable expressions, including references to assumptions. These forward looking statements are not based on historical facts but rather on the Directors' current expectations and assumptions regarding the Company's future growth, results of operations, performance, future capital and other expenditures (including the amount, nature and sources of funding thereof), competitive advantages, business prospects and opportunities. Such forward looking statements reflect the Directors' current beliefs and assumptions and are based on information currently available to the Directors. A number of factors could cause actual results to differ materially from the results discussed in the forward looking statements including risks associated with vulnerability to general economic and business conditions, competition, environmental and other regulatory changes, actions by governmental authorities, the availability of capital markets, reliance on key personnel, uninsured and underinsured losses and other factors, many of which are beyond the control of the Company. Although any forward looking statements contained in this announcement

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Glossary of technical terms:

"Ag"	silver;
"DSO"	direct shipping ore;
"facies"	observable attribute or attributes of a rock or stratigraphic unit,
"g"	grammes;
"g/t"	grammes per tonne;
"hypogene"	occurrence deep below the earth's surface,
"Inferred Resource"	that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes;
"JORC"	the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, as published by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia;
"JORC (2012)"	the 2012 edition of the JORC code;
"m"	metre;
"Mineral Resource"	a concentration or occurrence of material of economic interest in or on the earth's crust in such form and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity, and other geological characteristics of a Mineral Resource are known, estimated from specific geological evidence and knowledge, or interpreted from a well-constrained and portrayed geological model;
"Mt"	million tonnes;
"oz"	troy ounce;
"Pb"	lead;
"proterozoic"	geological eon spanning the time from the appearance of oxygen in Earth's atmosphere
"pXRF"	portable x-ray fluorescence
"QA/QC"	quality assurance/quality control;
"quartz-muscovite schist"	a foliated metamorphic rock (schist) composed essentially of quartz and mica,
"supergene"	occurrence relatively near the surface as opposed to deep hypogene processes;
"Supracrustal"	on existing basement rocks of the earth's crust;
"Zn"	zinc.

JORC 2012 Table 1
Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	· *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* · *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* · *Aspects of the determination of mineralisation that are Material to the Public Report.* · *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fMRE assay'). In other cases more explanation may be requMREd, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	· *A total of 52 diamond drill holes completed 2220.8 m of drilling. Exploration was managed by GeoQuest Ltd of Lusaka, Zambia on behalf of Galileo Resources PLC. Sampling was selective, undertaken typically on 1 m quarter core basis obtained from PQ and HQ drilling, honouring lithological and mineralisation boundaries. Minimum and maximum sample lengths varied from 0.30 - 1.50 m for all holes drilled. Typical sample weights of 1.5 to 3 kg were obtained per sample.* · Measures were in place to prevent sampling errors and ensuring correct metre delineation by the drilling company. · Hand held portable XRF measurements were used as an aid in the selection of intervals for assaying and to assist in programme planning. These results will not be used for resource estimation. · All samples were analysed by Intertek Genalysis in Perth, Australia. Sample preparation was completed by Intertek Genalysis dedicated sample preparation facility in Kitwe, Zambia. All samples were dried, crushed to ~2 mm, with pulverization up to 1.2 kg. Method code SP12 & SP67. A subset of pulverised material is dispatched via air freight to Perth, Australia to the analytical laboratory. For analysis, all samples were analysed for Zn, Ge, V and Ag. Zinc is determined by sodium peroxide fusion (Zirconia crucibles) with ICP-OES determination. Germanium is similarly analysed, though using ICP-MS. Silver and Vanadium are determined via a four acid digest with ICP-MS. Method codes are FP1/MS, FP1/OES & 4AO/OE.
Drilling techniques	· *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	· All holes are core holes, collared to typically 9-15 m using PQ (85 mm diameter), with HQ (63.5 mm) to the end of hole. · Holes are typically inclined ranging from -50 to -90 degrees with a variety of azimuths due to site access conditions. As such, geological and mineralisation intersections were not necessarily perpendicular. · Inclined holes were orientated (HQ size only) using a REFLEX ACT II RD Rapid Decent Core Orientation Tool at the end of each run (3 m).
Drill sample recovery	· *Method of recording and assessing core and chip sample recoveries and results assessed.* · *Measures taken to maximise sample recovery and ensure representative nature of the samples.*	· Core recovery was assessed through the routine collection of basic geotechnical parameters (recovery etc.) to assess core length drilled v core length recovered on a run basis. Total core recovery over the 52 holes is approximately 89-90%, with individual holes reporting from 69-100%. Core loss was most prevalent within the top 20 m of holes

Criteria	JORC Code explanation	Commentary
	· *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	where poor core recovery was associated with unconsolidated laterites and karstic terrain. · Cavity zones are logged accordingly, mineralised material within cavity zones is sampled independently of surrounding material. · The available information suggests that the there is no systematic bias due to sample loss.
Logging	· *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* · *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* · *The total length and percentage of the relevant intersections logged.*	· Core was logged for multiple attributes at the exploration camp and reviewed against surrounding diamond drill holes for conformity purposes. Lithological, structural, alteration, mineralisation styles and geotechnical parameters were collected for every hole. Downhole data is plotted on section & plan and viewed in a 3D environment to assess the validity and continuity of logged geological attributes. · Core was photographed on a tray by tray basis, both wet and dry for whole core. · Geological logging is qualitative in nature and in sufficient detail to support exploration activities and appropriate Mineral Resource estimation. · All recovered material was logged.
Sub-sampling techniques and sample preparation	· *If core, whether cut or sawn and whether quarter, half or all core taken.* · *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* · *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* · *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* · *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* · *Whether sample sizes are appropriate to the grain size of the material being sampled.*	· Core was cut using a core saw, with quarter core submitted for laboratory analysis. The remaining ¾ core is retained in the trays for library purposes. Approximately 3 m either side of the zone of interest were also submitted for analysis. · N/A · Coarse blanks were inserted into the sample stream at a frequency of 2.5% to assess any cross contamination at the laboratory. No issues of a significant nature are present. · Sample preparation techniques were completed by a commercial laboratory, though laboratory preparation processes have not been audited or reviewed and that full implementation of laboratory standard operating procedures has not been verified. · No core field duplicates / second-half sampling has been completed to date. No pulp duplicates have been completed to date. · Sample size are considered suitable for the type of material and grade variability.
Quality of assay data and laboratory tests	· *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* · *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* · *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether*	· All samples were analysed by Intertek Genalysis in Perth, Australia · For analysis, all samples were analysed for Zn, Ge, V and Ag. Zinc is determined by sodium peroxide fusion (Zirconia crucibles) with ICP-OES determination. Germanium is similarly analysed, though using ICP-MS. Silver and Zinc are determined via a four acid digest with ICP-MS. The techniques are considered total. Discussion with the laboratory prior to contract award as well as external expert 3rd party input were used to ensure the correct analytical technique for zinc was selected which could accommodate grades up to 50% Zn with

Criteria	JORC Code explanation	Commentary
	acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	consideration to the style and nature of mineralisation. · Hand held portable XRF measurements were used as an aid in the selection of intervals for assaying and to assist in programme planning. These results will not be used for resource estimation. · Quality control procedures include certified reference material with grades relevant to the grade of mineralisation, certified barren material and coarse blanks. No pulp duplicates or umpMRE determinations have been completed to date. Quality control material is inserted at a frequency of 5%. · Acceptable levels of accuracy and precision are observed with reference to internal error bars of 3 standard deviations and/or 5% error gates from the certified value. · No external checks have been completed at this stage, though it is highly recommended that either laboratory and/or external duplicate repeat and umpMRE determinations are completed as well as titrations on a suite of high grade zinc samples.
Verification of sampling and assaying	· *The verification of significant intersections by either independent or alternative company personnel.* · *The use of twinned holes.* · *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* · *Discuss any adjustment to assay data.*	· Addison Mining Services have independently verified the significant intersections reported for the holes detailed in this report. · No twin holes have been drilled. · Sample intervals, collar parameters and geological logs are recorded onto logging sheets where appropriate and entered into computers. Such logs are verified in Micromine software before being loaded into a relational Access database, with received laboratory assay files. · Database and geological staff validate database entries with reference to the original data. · Data verification includes comparing analytical results with downhole geology, reviewing assay results from surrounding holes, checks for internal consistency, checks on collar positions and downhole survey details as well as checks on geological entries. No significant discrepancies are noted. Physical data is stored securely, whilst digital data is stored in a relational Access database, suitably backed up. · No adjustments have been made to the assay data.
Location of data points	· *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* · *Specification of the grid system used.* · *Quality and adequacy of topographic control.*	· 100% of core holes have been surveyed using a hand held GPS unit with approximate accuracy of +/-5m. A survey of drill hole collars using a differential GPS has not yet been undertaken. A historically mined pit, although previously surveyed; for which the survey parameters are unknown and is yet to be re-surveyed using a differential GPS system. Downhole surveys were completed for all holes at 20 m intervals, though as the majority of holes are short (<60 m), little deviation in terms of azimuth or dip is noted.

Criteria	JORC Code explanation	Commentary
		· All surveying was undertaken in UTM Zone 35 South ARC 1950 map datum. · Topographic control is by a hand held GPS unit through the surveying of drilled drill holes. No topographic survey has been completed with a differential GPS system.
Data spacing and distribution	· *Data spacing for reporting of Exploration Results.* · *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* · *Whether sample compositing has been applied.*	· Surface drill hole spacing varies from 30m to 100 m for completed holes. Downhole surveys were completed for all holes at 20 m intervals, though as the majority of holes are short (<60 m), little deviation in terms of azimuth or dip is noted. · The data spacing has established geological continuity sufficient for an Inferred mineral resource estimate. · No physical sample compositing was completed. Analytical data compositing was performed as part of the estimation process for the purpose of model generation and grade interpolation.
Orientation of data in relation to geological structure	· *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* · *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	· The underlying geology is broadly shallowly dipping to the west and east, the mineralised package demonstrating a similar trend. Drilling predominately has been targeting across strike, with drill holes inclined from -90 to -50 degrees at a variety of azimuths due to site access constraints. Due to the constraints of the mineralisation and site access issues, not all holes intersected mineralisation / structures perpendicular to the drill hole, typically resulting in longer than 'true-width' intersections. Approximate true width of mineralised intervals are presented in results tables.
Sample security	· *The measures taken to ensure sample security.*	· All sampling was managed by GeoQuest Ltd. Samples for assaying were collected, checked and sealed and placed in heavy duty polyweave sacks which were sealed. The bagged samples were then transported by a GeoQuest Ltd vehicle with employee directly from Lusaka to Intertek Genalysis in Kitwe. No third parties were permitted unsupervised access to the samples before delivery to the laboratory. Confirmation was received from the laboratory on receipt as well as any details of potential tampering - of which none was observed or reported. The Chain of Custody is considered unbroken.
Audits or reviews	· *The results of any audits or reviews of sampling techniques and data.*	· No external audits have been completed. · Data reviews and validations have been completed internally. Quality control data is reviewed and where issues present, the laboratory asked to comment. Internal reviews of sampling techniques have been completed, including the observation of drilling and sampling techniques. No significant issues have been identified.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	· *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* · *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	· The Star Zinc deposit lies within valid exploration licence 19653-HQ-LEL. The licence was renewed for a further 3 years in August 2018. Galileo Resources Plc, has a beneficial interest in the licence of 95% though the licence remains in the name of Enviro Processing Ltd. The licence does not sit within in any National Park, Game Management Area or Forest Reserve. The deposit sits within a peri-urban area comprised of residential and small scale farming with external development pressures emanating from the growth and expansion of the city of Lusaka. · Permissions to operate as required in the area have been obtained. Dialogue continues with regard to surface rights owners.
Exploration done by other parties	· *Acknowledgment and appraisal of exploration by other parties.*	· Initial exploration activities were completed in the 1960's at the Star Zinc deposit by Chartered Exploration which concluded with the drilling of upwards of 59 vertical diamond holes on a 50m x 50 m pattern for 2,578.5 m. Other activities included geological mapping, soil geochemical surveys, pitting and ground geophysics (magnetics, gravity and electromagnetics). The drilling data has proven to be a useful guide to aid in exploration activities, but significant constraints on the data preclude its use in estimation. · Avmin Development Zambia Ltd completed geological mapping, soil sampling, rock chip sampling, ground gravity and targeting exercises over Star Zinc in 2003, but due to a historical tenure issue at the time, pulled out without completing any drilling activities.
Geology	· *Deposit type, geological setting and style of mineralisation.*	· The Star Zinc deposit can be referred to as a High Grade Structurally Controlled Willemite Deposit, the bulk of the deposit represented as hypogene willemite mineralisation, with relatively minor supergene mineralisation. · The local geology of Star Zinc is complex and forms a varied sequence of argillite, limestone, massive willemite ore, massive limestone and dolomites (Cheta and Lusaka Formations). The stratigraphic succession in the Star Zinc pit consists of limestone overlain by metamorphosed slaty limestone, by coarse marbles and overlain by hematite rich dolomite. A broad dome (west-east) is the main feature structurally of Star Zinc. · Mineralisation is present as replacement high grade lenses or bands of willemite (franklinite and gahnite) with lower grade lenses of hematite and willemite. Steeply dipping willemite veins / fractures have been mapped throughout the pit, either east-west dipping south, or sub-vertical north-south. Mineralisation is irregular, in parts tabular, anastomosing, replacement, dilatational at the

Criteria	JORC Code explanation	Commentary
		intersection of possible structures and in calcite-hematite-willemite veins and associated with more brecciated zones. · Karst fill deposits and saprolitic / pisolitic soil are locally highly mineralized with grades up to and over 20 %, principally to the south of the pit, untested and not evaluated by historical drilling.
Drill hole Information	· *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level - elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* · *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	· Provided in Section 10 of the accompanying AMS Star Zinc JORC 2012 report.
Data aggregation methods	· *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* · *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* · *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	· Drilling data intersections reported in this report are nominally reported with a cut-off grade of 0.4% and 10% zinc with no high grade cut-off. A maximum of 3 m of internal waste is allowed. · Reported results do not include equivalent values.
Relationship between mineralisation widths and intercept lengths	· *These relationships are particularly important in the reporting of Exploration Results.* · *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* · *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g.*	· Due to the constraints of the mineralisation and site access issues, not all holes intersected mineralisation / structures perpendicular to the drill hole, resulting in longer than 'true-width' intersections. Holes were drilled at a variety of azimuths, with inclinations ranging from -50 to -90 degrees. · Due to the relatively flat lying nature of the deposit, true thicknesses vary approximately 0-20% of the drilled interval thickness.

Criteria	JORC Code explanation	Commentary
	'down hole length, true width not known').	
Diagrams	· *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	· Appropriate scaled diagrams are included within the AMS Star Zinc JORC (2012) Resource Statement and Technical Report.
Balanced reporting	· *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	· All available exploration data for the Star Zinc deposit area has been collected and reported. Representative data from all drillings have been reported.
Other substantive exploration data	· *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	· Open pit mapping. Geological observations. Ground gravity survey re-processing and interpretation.
Further work	· *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* · *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	· Prior to the completion of any updates to mineral resource estimates and conceptual mining studies which may be reported in compliance with JORC 2012 and CRIRSCO aligned reporting code, the following recommendations are made: · DGPS final collar positions for Phase I and Phase II diamond collars · Topographic survey (spot heights) for the general area - needn't be more than 10-20 spot pick-ups at this stage across the current extents of mineralisation to verify/correct topography, compliment the DGPS DH collar data and pit survey data to re-build the topographical DTM. · Verification of the pit shell - via a couple of N-S and W-E detailed DGPS profiles across the pit to assess the accuracy of the current shape as well as the pit perimeter · Subject to the results of the pit surveying, further surveying may be requMREd · Surveying of the western and eastern pit wall/floor interfaces where mineralisation is observed. · Complete detailed geological and fault interpretation to improve geological models and to identify potential areas for further step out drilling.

Criteria	JORC Code explanation	Commentary
		· Selective re-analysis of mineralised samples across a variety of grade ranges by Titration method to check for analytical bias. · Consider a review of Phase 1 and 2 logging to ensure consistency and to better identify the high grade willemite zone. · Collect additional bulk density data from Phase 2 drilling across a range of grades and lithologies to improve spatial spread of bulk density data. · Review of QA/QC and Standard Operating Procedures. · Competent Persons site visits. · Additional drilling around the existing pit area, open fringes of the deposit and in areas were data density is low, it is acknowledged lack of drilling in these areas has largely been due to access issues. · Commencement of ore sorting and upgrading methodologies, technologies and test work for current likely sub-economic grades of material. · Open pit Conceptual Scoping Study and Preliminary Economic Analysis. · Commence with a formal and comprehensive Environmental Impact Assessment and Resettlement & Compensation Action Plan will be requMREd with extensive stakeholder engagement to facilitate mining operations, including interaction with the Zambian Roads Development Agency and ZESCO, the Zambian state owned power company with regard to the likely relocation of the road and electrical distribution infrastructure.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	· Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. · Data validation procedures used.	· Initial data collection was completed in MS Excel, visual inspections for errors were completed before import into Micromine for drillhole validation to check for issues such as overlapping intervals, missing intervals and intervals beyond hole depth. The validated data was then passed to MS Access to form the master database. · All lab assay data was imported into the access database and paMREd with sample data by sample ID query. · The final database was again validated in Micromine for overlapping intervals, intervals beyond hole depth, non consecutive intervals, missing intervals etc. A visual inspection of drillhole locations was completed.
Site visits	· *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	· No site visit by the competent person has taken place due to budgetary constraints. · The competent person has relied on information provided by GeoQuest, the independent exploration

Criteria	JORC Code explanation	Commentary
	· *If no site visits have been undertaken indicate why this is the case.*	contractor. All of this information has been reviewed and accepted by the competent person. · The anticipated maximum mineral resource category before commencing the study was inferred due to non differential GPS collar survey and poor resolution DTM. A site visit is anticipated following completion of this work and to allow classification of resources greater than Inferred category.
Geological interpretation	· *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* · *Nature of the data used and of any assumptions made.* · *The effect, if any, of alternative interpretations on Mineral Resource estimation.* · *The use of geology in guiding and controlling Mineral Resource estimation.* · *The factors affecting continuity both of grade and geology.*	· Reasonable understanding of geology and morphology of mineralization. Further work requMREd to better model outcrop and sub crop of mineralisation in historic pit area. Faulting identified but poorly understood at this time. Some faults may constrain the bounds of the mineralisation and offset it vertically in places. · Greatest uncertainty around historic open pit area where quantitative information is lacking, faulting and mineralisation dip may effect interpretation and volume. · Geology was used to separate the hypogene mineralisation from the supergene mineralisation. Only hypogene mineralisation is reported as part of the resource at this time.
Dimensions	· *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	· Resource block model ranges from surface to approximately 40 m below surface over a length of approximately 300 m from east to west and 20 to 100 m from north to south. Thickness is typically between 5 and 25 m.
Estimation and modelling techniques	· *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* · *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* · *The assumptions made regarding recovery of by-products.* · *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).* · *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	· A detailed explanation of the estimation and modelling techniques is given in Section 14 of the technical report relating to this resource estimate. It is not practical to describe all aspects of the estimation in JORC Table 1. · Estimation was completed using block modelling and ordinary kriging, these methods are considered appropriate. No top cutting was applied but a high grade domain was used with hard boundary to constrain the high grade values and prevent smoothing into low grade area. · Micromine 2018 software was used. · A Block model with the cell size 10 m x 10 m x 4 m was generated over the deposit area and restricted to wMREframe models. Cell size based on the approximate 30 m drill spacing and stratigraphic nature of mineralization. Sub blocking was applied to better fit wMREframe models. · A variable search geometry was used to follow the dip of the deposit where it steepens near to the historic open pit, elsewhere the geometry of the axis used in variography were applied. Additional Kriging Parameters are as follows. · Interpolation was conducted at the parent block scale · Discretization 5x5x2

Criteria	JORC Code explanation	Commentary
	· *Any assumptions behind modelling of selective mining units.* · *Any assumptions about correlation between variables.* · *Description of how the geological interpretation was used to control the resource estimates.* · *Discussion of basis for using or not using grade cutting or capping.* · *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	· Negative weights were not set to zero · Maximum of 2 composite points per drillhole · Single sector search ellipsoid · Search Radius 50 x 50 x 10 m for axis 1, 2 and 3 respectively. · Maximum of 8 composite samples per search. · A univariate estimate was completed · No mine production data exists to use for validation · Geology was used to separate the hypogene mineralisation from the supergene mineralization. Only hypogene mineralisation is reported as part of the resource at this time. · The model was validated by visual inspection of input and output data as well as statistical validation using boundary analysis and declustered mean comparison.
Moisture	· *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	· Bulk density is based on dry values
Cut-off parameters	· *The basis of the adopted cut-off grade(s) or quality parameters applied.*	· See section 14.9 of the technical report for a detailed explanation. · Galileo proposes to sell Run of Mine (ROM) material to the BRM PLC owned Kabwe Mine in Zambia. Kabwe is approximately 100 km to the North by the T2 paved road. · At a cut-off grade of 2% the average Zinc grade is in excess of 15%. it is anticipated that blending of material below 2% Zn would have a negative impact on potential revenue. · A preliminary pit optimization was completed, blocks falling in the pit shell were considered for classification as resources. · 2% Zn was selected as the cut-off grade for reporting of material within the conceptual pit which had a reasonable prospect of economic extract.
Mining factors or assumptions	· *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	· Open pit mining is assumes as the most likely method of extraction. · In order to identify material which has a reasonable prospect of economic extraction under the above selling conditions a preliminary pit optimisation was completed using the above selling prices and the following key parameters; · Zinc price - 2700 $/t (LME 3 year trailing average to April 2019) · Ore/Waste mining cost - 6 $/t · Rehabilitation - 1 $/t · Transport - 11 $/t · Mining Dilution - 5% (Waste/Ore) · Mining Recovery - 95% · Pit Slopes - 45°
Metallurgical factors or assumptions	· *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as*	· A direct sale of ROM material to the Sable zinc plant at Kabwe is proposed at this time.

Criteria	JORC Code explanation	Commentary
	part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	· In order to establish the likely economic viability of the above mining approach AMS have estimated the profitability of the mining operation linked to a zinc leach-precipitation circuit. The report "Star Zinc Deposit - Conceptual Project Report", January 2015 by Scorpion Mineral Processing South Africa refers. The following key parameters are used: · *Milling - 11 $/t ore* · *Leaching - 125 $/t ore* · *Precipitation - 640 $/t zinc produced* · *4y cost price inflation from 2015 - 10 %* · *Process recovery - 91 %* · Zn precipitate - 60%
Environmental factors or assumptions	· *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	· At this stage it is assumed that no mineral processing will take place at Star Zinc and therefore no tailings storage requMREd. · Stock piling locations will be requMREd but are yet to be identified. · Due to the growth of Lusaka, the Star Zinc deposit and to a certain extent, the entMRE licence area, now sits within an active developing residential and small scale farming area with both surface rights holders and tribal land allocated plots either developed or being developed. · With the expansion of Lusaka, the situation is fluid with new plots being demarcated and existing plots being sub-divided, with a corresponding significant increase in land prices in recent years. A comprehensive Environmental Impact Assessment and Resettlement & Compensation Action Plan will be requMREd with extensive stakeholder engagement to facilitate mining operations, including interaction with the Zambian Roads Development Agency and ZESCO, the Zambian state owned power company with regard to the likely relocation of the road and electrical distribution infrastructure prior to mining operations commencing or being approved.
Bulk density	· *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* · *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* · *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	· The dry bulk density was calculated using the water displacement Method 3 described by Lipton (2001). The method described by McKenzie (1983) for more porous rocks was also completed for additional testwork / confirmation purposes. · All samples were oven dried for 2 hours at 110 °C. · Bulk density determinations were completed on a variety of material types. · A strong relationship between bulk density and grade was identified and the bulk density in the block model estimated as a function of the estimated zinc grade.

Criteria	JORC Code explanation	Commentary
Classification	· *The basis for the classification of the Mineral Resources into varying confidence categories.* · *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* · *Whether the result appropriately reflects the Competent Person's view of the deposit.*	· A detailed risk assessment of the resource classification is presented in section 14.8 of the technical report which considers data quality and reliability, geological interpretation, estimation of grade and tonnage and continuity. · The overall perceived risk is currently high due to lack of CP site visit, non differential GPS collar surveys, poor resolution DTM in historic pit area and poor Zn assay accuracy at higher grades (>15%). However, all of these issues area rectifiable with further work and will significantly reduce resource estimation risk once completed. · All resources were restricted to a maximum category of Inferred. · The competent person is satisfied that the results reflect their view of the deposit and considers the resource classification appropriate.
Audits or reviews	· *The results of any audits or reviews of Mineral Resource estimates.*	· No external reviews or Audits have been completed. · AMS have completed internal peer reviews of the methodologies, interpretation, models and results of this estimate.
Discussion of relative accuracy/ confidence	· *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* · *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* · *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	· A statistical measure of uncertainty is not appropriate at this time. · The highest risk factor ascertaining to the accuracy of the estimate is the interpretation of the mineralized volume and therefore the tonnage of the estimate. · The accuracy of the drill hole collars and digital terrain model over the historic pit area, as well as lack of data in the historic pit area are key factors in this uncertainty. · A qualitative estimate of uncertainty is of the order +/-15 global contained resource tonnes and metal. This is considered by the competent person to be well within the acceptable limits of an inferred resource. · Poor accuracy of higher grade assays is also a risk factor, although it should be noted that in relative terms the uncertainty on assay values, based on CRM analysis is of the order +/-1% Zn in ~30% Zn reference materials, or a 3-4% estimation error. Volume estimation error is therefore much more significant. · A local estimate has been completed, only tonnages which have a reasonable prospect of economic extraction have been reported as Resources as stipulated by the JORC 2012 code. All Resources are considered relevant to technical and economic evaluation. However, the lack of non differential GPS collar surveys causes uncertainty on the location of input data samples and therefore the accuracy of the local estimate.

END